The following is a tabulated analysis of the powdered and sun-dried leaves:—

Ether extract (chlorophyll and resins)		5·51
Alcoholic extract (gymnemic acid, tartaric acid, glucose, neutral bitter principle, resin, &c.)		19·50
Aqueous extract (gum 1·45 per cent., glucose, carbohydrate, and extractive)		16·87
Alkaline extract, by difference (albuminous and colouring matters)		8·15
Acid solution	calcium oxalate	7·64
	pararabin	2·74
Ash (balance of)		5·69
Cellulose		27·86
Moisture		6·04
		100·00

NOTES

THE Conference called by the French Government to consider the means to be adopted for the construction of a photographic chart of the heavens, meets at Paris on Saturday next. We believe that the Astronomer-Royal and Mr. Common have been delegated to represent the Royal and the Astronomical Societies.

THE Rev. S. J. Perry and Dr. Copeland have accepted Dr. Bredichin's invitation to observe the total solar eclipse in August next at his residence near Moscow.

WE regret to announce the death of Dr. Daniel Rutherford Haldane, who was for some time President of the Royal College of Physicians of Edinburgh. In response to a request by that body he represented the College in the General Council of Medical Education and Registration in the United Kingdom. He died at his residence in Edinburgh on Tuesday last.

THE annual Conference of the National Union of Elementary Teachers, which has met this week at Portsmouth, has been remarkably successful. It has been attended by about 400 delegates from the different affiliated associations, and by a number of individual members. In his inaugural address, Mr. Girling, the President, made some sensible remarks on technical education in elementary schools. Handicrafts could not be taught in elementary schools, but he was decidedly of opinion that our system of primary education ought to be better adapted to fit children for work when they leave school. He testified to the enterprise and public spirit of the City Guilds, and their Secretary, Sir Philip Magnus, who had started handicraft classes for elementary teachers in London. But he would ask them to co operate in helping to make our educational system a more rational one. Then the teachers would have most valuable aid in preparing the future working-men of the country on intelligent lines, and the technical training of children, now so well begun in our infant-schools through the medium of kindergarten exercises, might be carried still further in the senior schools. At the meeting on Tuesday, a resolution was unanimously passed in favour of the appointment of a Minister of Education. Mr. Salmon, by whom this resolution was proposed, maintained that many educational questions of the highest importance could be adequately settled only by a Minister of much ability and wide experience, invested with large authority and bearing direct and undivided responsibility. Given such a Minister, with great power and noble opportunities, they could justly look to him for great efforts and noble issues.

THE fourth Bulletin of Miscellaneous Information, issued from the Royal Gardens, Kew, contains papers on Manilla hemp, plantain and banana fibre, and pine-apple fibre. Manilla hemp is one of the most important of cordage fibres, and the whole supply comes from the Philippine Islands. Everything made from it can be easily converted into paper of excellent quality. A plant of Manilla hemp may be seen in the Palm House at Kew; and sets of exhibits in the Kew Museum, No. 2, include the raw fibre, cables, ropes, twine, fine muslin fabrics, "half-stuff," and paper of all kinds, the latter being made from old Manilla ropes. Manilla hemp plants have been introduced from Kew to Jamaica, and to other portions of the West Indies. In favourable situations they grow well, but not so readily as the ordinary bananas and plantains. As the fruit is valueless, they can only be grown for the sake of the fibre, and this alone does not appear to offer sufficient inducement to plant up large areas.

AN Exhibition of the products of the Philippine Archipelago is to be opened at Madrid on June 1. It is to be divided into eight sections, with corresponding sections in the Central Commission at Manilla. Amongst these the following are of specially scientific interest:—(1) For the study of the geography, meteorology, terrestrial magnetism, orography, hydrography, anthropology, geology, and mineralogy of the Philippines; (4) the botanical geography of the archipelago, its fauna and flora; (8) general education, public instruction, and the arts and sciences in the Philippines generally. Sub-commissions have been appointed in all the chief places in the archipelago to collect objects for exhibition and information, to be forwarded to the Central Commission, and thence to Madrid.

DURING the next three months a course of lectures on zoology will be delivered at the Zoological Gardens, Regent's Park, by Prof. Beddard. The lecturer will try to make the subject intelligible and attractive to young people, and as the cost will not exceed the bare price of admission to the Gardens, it may be hoped that the course will be largely attended. The arrangements have been made by the Association for the Extension of University Education.

A SMALL Industrial Exhibition was opened on Tuesday last at the Flora Gardens Board School, Hammersmith. Its object is to encourage home industries among the poor.

THE twelfth annual meeting of the members of the Sunday Society was held on Monday, April 4, at the Conduit Street Galleries, Mr. R. Carter in the chair. Mr. Mark H. Judge, Hon. Sec., read the annual report, which claimed for the past year that never before had there been so many or such decisive expressions of public opinion in favour of the Society's object.

A REMARKABLE illustration of the puzzling migratory habits of the herring has just been observed on the south west coast of Norway, at the so-called Jæderen, between the towns of Stavanger and Egersund. This district used to be one of the richest herring-fishing grounds in Norway during the spring, but about twenty-five years ago the fish suddenly and completely disappeared from the coast. Last month enormous shoals once more came under shore, first "striking land" at the same spot as in former times. The quality of the herring is exactly the same as it was twenty-five years ago, and the shoals were accompanied by numerous "herring" whales.

THE first and second parts of a Catalogue of the remains of Siwalik Vertebrata contained in the Geological Department of the Indian Museum, Calcutta, have been sent to us. The work is compiled by Mr. Richard Lydekker, who says that the magnificent Siwalik collection in the Indian Museum is equalled only by that of the British Museum.

AN Exhibition of Seeds will take place at Trondhjem, from July 4 to 10, in connection with the eighth general Norwegian Agricultural Meeting. At the same time, lectures on the subject will be delivered to the meeting, and a Fisheries Exhibition will also be held.

Dr. Franz Boas, who visited the Indian tribes of British Columbia in the autumn of 1886, has presented in a preliminary Report some of the results of his journey. The large wooden huts of these tribes, their canoes, their fishing-gear, and hunting-methods have often been described, but Dr. Boas points out that their traditions, religious ideas, and social organisation are not equally well known. The principal figure in the mythology of several of them is a raven, who created all things, not for the benefit of mankind, but "in order to revenge himself." Cannibalism is practised by some tribes in connexion with the winter dances; and there is a Kwakiutl tradition, to the effect that one of their ancestors descended from heaven, wearing a ring of red-cedar bark, and taught the people the cannibal ceremonies. These ceremonies have been adopted only in part by the Qomoks, who content themselves with eating "artificial" bodies, which they prepare "by sewing dried halibut to a human skeleton." Among the Tsimpshian, the Tlingit, and the Haida, children belong to the mother's gens; among the Kwakiutl and Selish tribes they belong to the gens of the father. In some tribes there are as many as from fifteen to twenty gentes. Members of the same gens are not allowed to intermarry.

A work on "Physiological Psychology," by Prof. George T. Ladd, of Yale, will shortly be published. The writer, according to *Science*, maintains "a philosophical and psychological stand-point, while admitting to their proper place the conclusions reached by physiology respecting the nature and functions of the nervous system."

The new numbers of "Studies in Microscopical Science," edited by Mr. A. C. Cole, deal with defoliation, spermatozoa in the Invertebrata, acute parenchymatous nephritis, fibrosis of kidney, and microbes.

The seventh Deutsche Geographentag will be held at Carlsruhe to-day. The chief papers will relate to the German African colonies.

Shocks of earthquake were felt at Friedau (Carniola) on March 27, and at Travnik, in Bosnia, on March 31, at 3.30 a.m. In the night of April 1 there was a severe shock at Forli, in Italy.

We have received from the Johns Hopkins University a new number (vol. iii. No. 9) of the series of "Studies from the Biological Laboratory." These "Studies," issued from time to time, contain most of the original scientific papers published by members of the Biological Department of the University. The editor and associate-editor are Dr. H. Newell-Martin and Dr. W. K. Brooks. The present number is a paper, by Dr. J. R. Duggan, on the influence of alcohol on the conversion of starch by diastase.

In a statistical work which is being published, M. E. Levasseur, of Paris, shows that the chances of living long at any given age are much greater now in France than they were before 1789. Of 2000 infants (under one year) 1186 survived in 1789; 1460 survive at present. In 1789, 738 persons out of 2000 reached the age of 40; the number now is 1110. In 1789, 144 persons out of 2000 lived to the age of 75; the number now is 360. The death-rate of France is much the same as that of England, being rather superior at some ages, and inferior at others.

Dr. Dudgeon, of Pekin, has at last published in Chinese a complete work on anatomy, at which he has been working for some years past. The printing was done by the press of the Tung-Wên or Foreign Language College, and the whole expense was borne by the Chinese Government. In accordance with Eastern custom, the title-page of the book is written by one of the Chinese Ministers who is celebrated for his beautiful calligraphy, and there are several prefaces by some of the highest officials of the Empire commending the work to the study of their countrymen. There are in all six volumes, two containing the illustrations, six hundred being plates. The latter were cut on blocks by native artists. Copies were presented to all the Ministers and other high officials. The companion work on physiology is almost ready for the press.

In an article on "The Phylogeny of the Camelidæ," lately printed in the *American Naturalist* extra, Mr. E. D. Cope points out that the development of the camel in North America presents a remarkable parallel to that of the horse. The ancestors of both lines appear together in the Wasatch or lowest Eocene, and the successive forms develop side by side in all the succeeding formations. Both lines died out in North America, and of the two, the camels only have certainly held their own in South America. The history of the succession of horses in Europe, although not so complete as that in America, extends over as wide a period of time. Not so with the camels. There is no evidence of the existence of the camel line in the Old World before the late Miocene epoch; and so far as the existing evidence goes, the New World furnished the camel to the Old.

In the *American Meteorological Journal*, Mr. M. W. Harrington is giving a full and very interesting account of the Chinook winds. The "Chinooks" are warm, dry, westerly or northerly winds occurring on the eastern slopes of the mountains of the north-west, beginning at any hour of the day, and continuing from a few hours to several days. Mr. Harrington says they may occur when a cyclone or anticyclone passes on such a course that the air is forced over the mountains from the western to the eastern slope. They are, therefore, winds similar to the "föhn" of Switzerland. In adding them (as Mr. G. M. Dawson, of the Geological Survey of Canada, had already done) to the class of winds of which the "föhn" is the type, Mr. Harrington points out that he is simply adding another to an already extensive list. Dr. Jelinek, in 1867, called attention to the fact that winds on the eastern slopes of the Caucasus were of this character. A similar wind occurs under the lee of the Elburz Mountains. Trebizond is in the lee of a high range of mountains, and has similar winds. They are common on the north side of the Pyrenees, and on the south coast of the Bay of Biscay. A similar wind has long been known in West Greenland, and Hoffmeyer proved, some years ago, that it is of the same character as the "föhn." It has been felt as far north as 82½° of latitude. Mr. Scott suggests that the hot winds of South Africa and parts of Australia are of the same character, while the analogy is proved complete for the hot "north-westers" of the Canterbury Plains of New Zealand.

The first number of the American journal *The Stevens Indicator*, in its new form as a quarterly, contains an article giving a glowing account of the general prosperity of the Stevens Institute. The advance secured is attributed mainly to the wise and energetic leadership of President Morton. "To him," says the *Indicator*, "belongs the honour of realising, more than twenty years ago, when the Institute was first planned, that it would find its most useful work in the then almost unoccupied field of mechanical engineering, and that to this work it should confine, for a series of years at least, all its resources and efforts. How well the plans have succeeded is borne out by the long list of graduates who have been sent forth into positions of honour and trust, of influence and remuneration, by Stevens Institute during the last twelve years."

Capt. Gates, of the ship *L. Schepp*, has reported to the U.S. Hydrographic Office that on April 19, 1886, when he was off Cape Horn, on a voyage from San Francisco to Liverpool, the temperature of the water suddenly rose from 42° to 44°. Thinking that the vessel was too close in shore, he hauled off three points, and, after he had stood four hours on this course, he found that the temperature had fallen to 42°. On a previous voyage Capt. Gates noticed this warm belt.

COMMISSIONER COLMAN, of the Department of Agriculture in the United States, has issued a Circular relating to the so-called Australian rabbit. He points out that this animal—the common rabbit of Europe—has been very mischievous in Australia, and expresses his belief that its introduction into America would be an unnecessary and hazardous experiment. Mr. Colman is of opinion that Congress should pass a law conferring upon the Commissioner of Agriculture the power to prevent the landing of any animal, bird, or other pest that might be injurious to agriculture; and he cites the case of the English sparrow as an example of the harm that may be done by species taken without due consideration from the Old World to the New.

THE Swedish Government is anxious to acquire a colony in Africa, and is consequently preparing an Expedition under the direction of Lieut. A. Wester, formerly Chief of the Congo Station, Leopoldville. At the last meeting of the Stockholm Society of Anthropology and Geography, Lieut. Wester reported on the subject. The Expedition may probably start next summer, and will be absent about a year, making Cameroon its base of operations. The cost will be about 160,000 kroner (8000*l.*).

MR. PAUL BEDFORD ELWELL will publish shortly, with Messrs. Whittaker and Co., an English translation of Gaston Planté's work on "The Storage of Electrical Energy."

THE eighth volume of the Journal of the Royal Horticultural Society, just issued, consists of a valuable Report on the effects of the severe frosts on vegetation during the winters of 1879-80 and 1880-81. The Report has been prepared by the Rev. Geo. Henslow, Honorary Secretary to the Scientific Committee of the Royal Horticultural Society. Most of the facts were obtained by means of schedules issued in 1880 and 1881.

A WORK entitled "The Australasian Federal Directory of Commerce, Trades, and Professions," will shortly be published in London under the direction of Mr. J. W. F. Rogers, of Melbourne and Sydney. It has been compiled by the assistance of some thousands of persons, many of them Colonial Government officials, and will give both in an alphabetic and a classified form the business addresses for over three thousand Australasian towns, large and small. Reviews of the social and commercial development of the eight colonies of this group will appear in the Directory, with maps and gazetteer.

AN ingenious system of gas-lighting by electricity has been introduced by Messrs. Woodhouse and Rawson. Gas can be turned on, lit, and turned off from any convenient position irrespective of where the gas-fittings are placed. The principle of attachment is like that of the portable electric gas-lighter—*i.e.* the gas is lighted by an electric spark—but the general arrangements are for permanent fitting.

WE have received the fifth and sixth parts of the fourth volume of Dr. L. Rabenhorst's elaborate "Kryptogamen-Flora von Deutschland, Oesterreich, und der Schweiz." The subject dealt with is Bryineæ: Stegocarpæ (Acrocarpæ). The text is finely illustrated.

THE second part of the Report for 1885 of the Chief Signal Officer of the United States, is a separate treatise by Prof. William Ferrel, entitled, "Recent Advances in Meteorology, systematically arranged in the form of a Text-book, designed for use in the Signal Service School at Fort Meyer, and also for a Hand-book in the Office of the Chief Signal Officer." It is an octavo volume of 440 pages, and is published by the U.S. Government.

THE sixty-fourth number of the Journal of the Society of Telegraph-Engineers and Electricians, contains "The Pre-Determination of the Characteristics of Dynamos," by Mr. Gisbert Kapp; "Some Experiments on Secondary Cells," by Mr. James Swinburne; and "Some Magnetic Problems," by Prof. George Forbes. Reports of the discussions on these papers are also given.

A PERMANENT matrix excluder of draught and dust has been sent to us by Mr. T. J. Porter, the inventor. The excluder is made of a special composition inclosed in long, narrow strips of warm-coloured cloth, and moulded into a suitable form. The application of hot water enables the excluder to be formed into a long, narrow, solid, and permanent matrix round doors and windows. Mr. Porter says that it makes a practically air-tight joint, and entirely precludes the passage of draught and dust between doors and their casings, and windows and their casings.

A HALIBUT weighing thirty-four pounds and measuring 41 inches in length was captured lately in the lower Potomac, near Colonial Beach. It has been preserved in alcohol by the Smithsonian Institution, and a cast has been made and placed on exhibition in the U.S. National Museum. *Science* says this is the first authentic case of a halibut in fresh water.

THE additions to the Zoological Society's Gardens during the past week include a Short-tailed Wallaby (*Halmaturus brachyurus*) from Australia, presented by Mr. Herbert Maude; an American Flying Squirrel (*Sciuropterus volucella*) from North America, presented by Mr. A. R. Verschoyle; an Egyptian Mastigure (*Uromastix spinipes*) from North Africa, presented by Mr. V. J. Chamberlain; a Nepal Hornbill (*Aceros nepalensis*) from Nepal; a Tuberculated Iguana (*Iguana tuberculata*) from the West Indies, deposited; a Burchell's Zebra (*Equus burchelli*) from South Africa; two Adorned Ceratophrys (*Ceratophrys ornata*); an Anaconda (*Eunectes murinus*) from South America, purchased; a Rhesus Monkey (*Macacus rhesus*), a Sambur Deer (*Cervus aristotelis*), two Collared Fruit-Bats (*Cynonycteris collaris*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

ORBIT OF THE BINARY STAR 14 (*i*) ORIONIS.—In the *Monthly Notices* for March, Mr. J. E. Gore publishes elements of the orbit of this binary, which is identical with O Σ 98. Mr. Gore's results, which he regards as only provisional, give a period of 190·48 years, time of periastron passage 1959·05, eccentricity 0·2465, and semi-axis major 1″·22. A comparison of places computed from these elements with the observations extending from 1844 to 1887, shows considerable discordances in the position-angles, whilst the distances agree very closely. The orbit of this double star does not appear to have been previously computed.

THE WASHINGTON OBSERVATORY.—Capt. R. L. Phythian, U.S.N., the Superintendent of the U.S. Naval Observatory, has published the programme of work to be pursued at the Observatory during the year 1887. From it we learn that with the 26-inch equatorial the observations of double stars, of the fainter stars in the Pleiades, and of the conjunctions of the five inner satellites of Saturn with the minor axis of the ring, and of the angles of position and distances of Hyperion will be continued during the year. The small equatorial will be used for observations of comets and of occultations of stars by the moon, as well as of stars and asteroids required for purposes of identification. With the transit-circle it is proposed to complete the observations of miscellaneous stars for the forthcoming transit-circle catalogue and also to observe the sun, moon, planets (major and minor), and stars of the American Ephemeris. Photographs of the sun will be taken daily, when practicable, with the photo-heliograph of the Transit of Venus Commission pattern.

NAMES OF MINOR PLANETS.—Minor planets Nos. 263 and 265 have been named *Dresda* and *Anna* respectively.